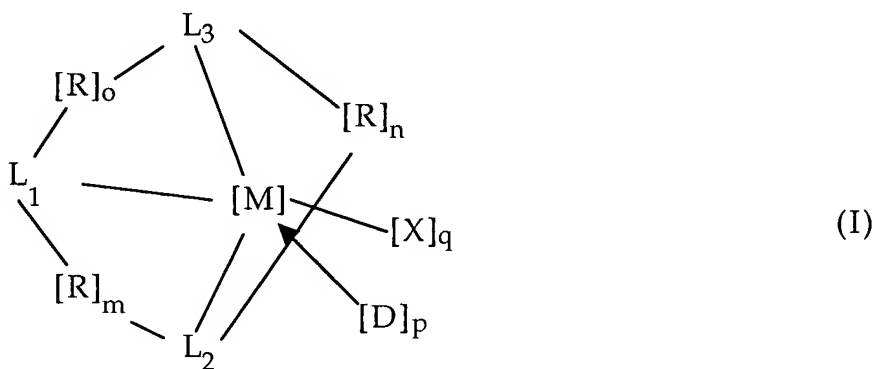


Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application:

Claims

1. (Currently Amended): Olefin polymerization catalyst component comprising an organometallic compound of general formula (I)



wherein[[:]]

M is a transition metal selected from the group consisting of groups 3, 4-10, lanthanide, ~~or~~ and actinide of the periodic table of the elements, ~~preferably titanium, zirconium or hafnium;~~

each R is independently a structural bridge rigidly connecting two ligands L₁, L₂ and L₃ and is constituted by 1 to 4 chain atoms selected from the group consisting of carbon, silicon, germanium, oxygen, and boron;

m, n and o are 0 or 1, with the proviso that m+n+o is 2 or 3;

L₁ is a ligand of the cyclopentadienyl-type ligand or is isolobal to cyclopentadienyl; ~~preferably a cyclopentadienyl, indenyl or~~

~~fluorenyl ring, cyclopenteno[b]tiophenyl
cyclopenteno[b:b']dithiophenyl, cyclopenteno[b]pyrrolyl,
boratabenzene, phospholyl, dihydroindeno[b]indolyl, optionally
substituted by one or more R^+ groups; most preferably a
cyclopentadienyl, indenyl or fluorenyl ring, optionally
substituted by one or more R^+ groups;~~

L_2 is a ligand of the cyclopentadienyl-type ligand, ~~or~~ is isolobal to cyclopentadienyl, or is a monovalent anionic ligand selected from the group consisting of N, P, and B when $m+n=2$, or ~~$\neq L_2$~~ is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $m+n = 1$;

L_3 is a monovalent anionic ligand selected from the group consisting of N, P, and B when $n+o = 2$, or ~~$\neq L_3$~~ is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $n+o = 1$;

R^1 is hydrogen, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, or C_3 - C_{20} alkenyl, optionally comprising 1 to 5 heteroatoms ~~such as~~ selected from the group consisting of Si, N, P, O, F, Cl, and Br;

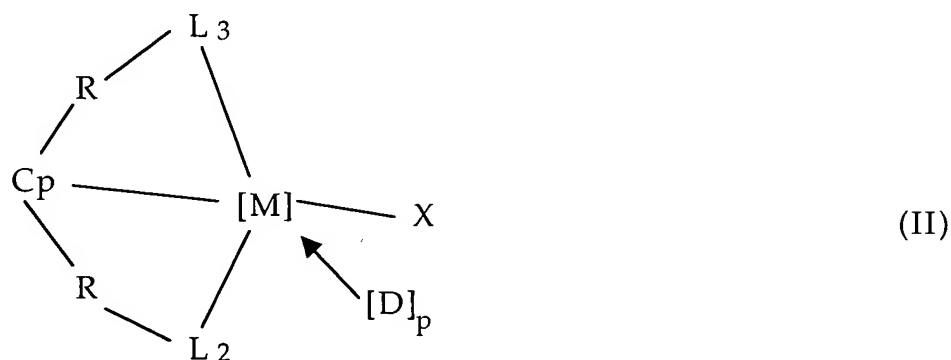
each X is independently selected from the group consisting of hydrogen, halogen, NR^2 , and R^2 , ~~with wherein~~ R^2 is equal to C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, or C_3 - C_{20} alkenyl, optionally comprising 1 to 5 heteroatoms ~~such as~~ selected from the group consisting of Si, N, P, O, F, Cl, and Br;

q is a number whose value is: 0, 1, 2 or 3, depending on ~~the~~ valency of the metal M;

D is a neutral Lewis base [[,]]; and

p is a number whose value is [[,]] 0, 1, 2 or 3.

2. (Currently Amended): Catalyst component according to claim 1 wherein n is 0 and each R is independently selected from the group consisting of CR^1_2 , SiR^1_2 , $\text{CR}^1_2\text{-CR}^1_2$, $\text{CR}^1_2\text{-SiR}^1_2$, and $\text{SiR}^1_2\text{-SiR}^1_2$; wherein each R^1 is independently selected from the group consisting of hydrogen, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, and $\text{C}_3\text{-C}_{20}$ alkenyl, optionally comprising 1 to 5 heteroatoms ~~such as~~ as selected from the group consisting of Si, N, P, O, F, Cl, and Br.
3. (Original): Catalyst component according to claim 1 wherein D is selected from the group consisting of linear ethers, ~~or~~ cyclic ethers, amines, and phosphines.
4. (Currently Amended): Catalyst component according to claim 1 wherein the organometallic compound has formula (II)



wherein Cp is a cyclopentadienyl or indenyl ring, optionally substituted by one or more R^1 groups, and M is selected from the group consisting of Ti, Zr and Hf;

each R is independently selected from the group consisting of CR^1_2 , SiR^1_2 , $\text{CR}^1_2\text{-CR}^1_2$, $\text{CR}^1_2\text{-SiR}^1_2$, and $\text{SiR}^1_2\text{-SiR}^1_2$, wherein R^1 is hydrogen, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, or $\text{C}_3\text{-C}_{20}$ alkenyl, optionally comprising 1 to 5 heteroatoms ~~such as~~

selected from the group consisting of Si, N, P, O, F, Cl, and Br[[.]]_z

L₂ and L₃ are independently selected from the group consisting of NR¹, PR¹, BR¹, O and S;

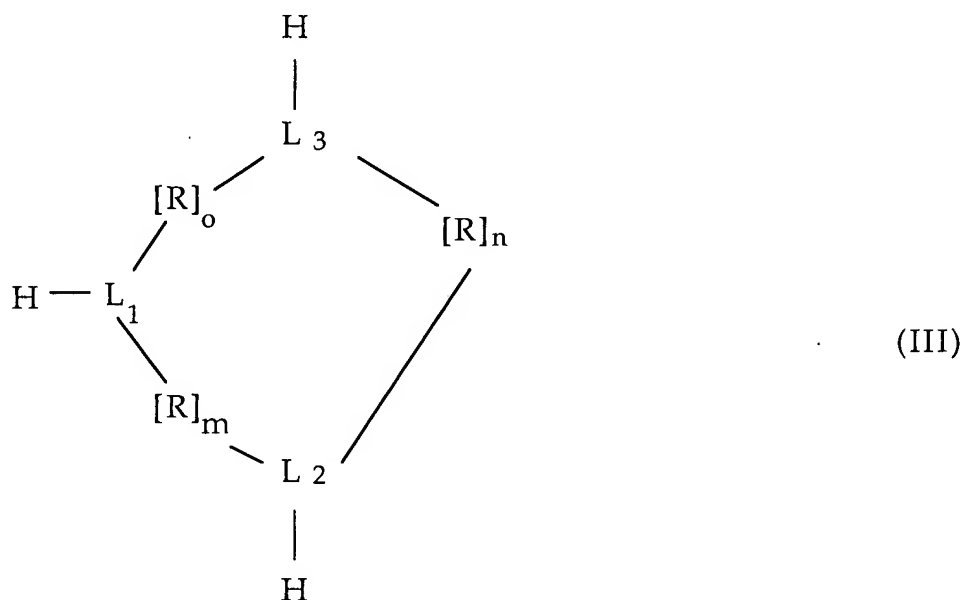
X is independently selected from the group consisting of hydrogen, halogen, ~~NR₂~~, NR₂, R² ~~with wherein~~ R² is equal to C₁-C₂₀ alkyl, C₃-C₂₀ cycloalkyl, C₆-C₂₀ aryl, or C₃-C₂₀ alkenyl, optionally comprising 1 to 5 heteroatoms ~~such as selected from the group consisting of Si, N, P, O, F, Cl, and Br[[.]]_z~~

D is a neutral Lewis base; and

p is a number whose value is: 0, 1, 2 or 3.

5. (Original): Catalyst component according to claim 1 wherein o is equal to 0.
6. (Currently Amended): Catalyst component according to claim 1 wherein at least one [[L]] group selected from L₁, L₂ and L₃ and/or one R group contains ~~an~~ -O-SiR₂ group.
7. (Previously Presented): Catalyst component comprising a compound according to claim 1 and a porous support.
8. (Currently amended) Olefin polymerization catalyst comprising a catalyst compound according to claim 1 and a cocatalyst selected from the group consisting of aluminoxanes and boron Lewis acids.

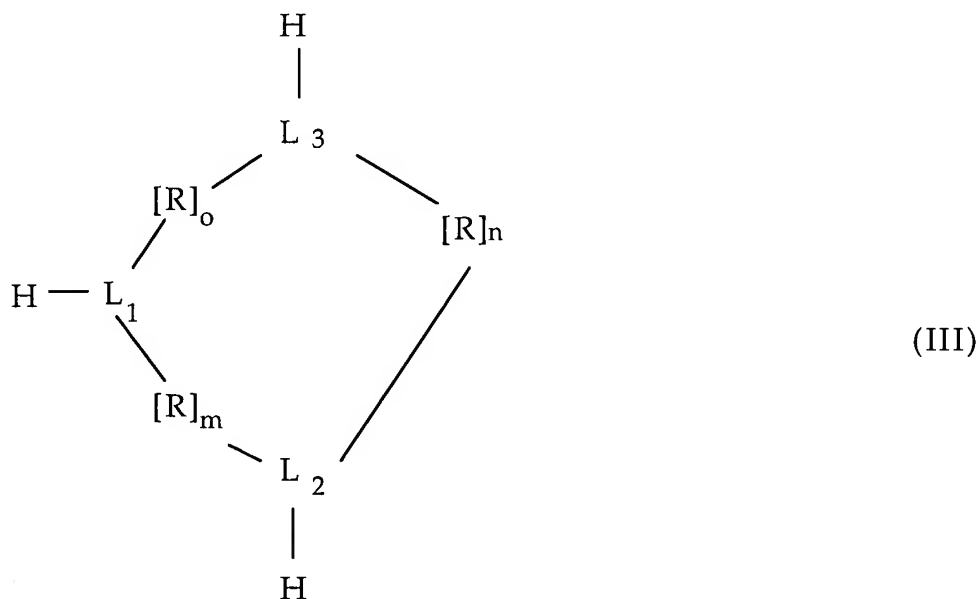
9. (Currently Amended): Process for preparation of the catalyst components ~~component~~ according to claim 1 ~~including comprising~~ reacting a compound of formula MX_{q+3} wherein M is a transition metal selected from the group consisting of groups 3, 4-10, lanthanide, ~~or~~ and actinide of the periodic table of the elements, X is a monovalent anionic ligand, and q is 0, 1, 2, or 3 depending on ~~the~~ a valence of the metal M, with a compound of formula (III)



wherein

each R is independently a structural bridge rigidly connecting two ligands L_1 , L_2 and L_3 and is constituted by 1 to 4 chain atoms selected from the group consisting of carbon, silicon, germanium, oxygen, and boron; wherein these chain atoms optionally are ~~can be~~ part of fused rings, aromatic rings, or spiro rings;

m, n and o are 0 or 1, with the proviso that $m+n+o$ is 2 or 3[[.]];



wherein

each R is independently a structural bridge rigidly connecting two ligands L_1 , L_2 and L_3 and is constituted by 1 to 4 chain atoms selected from the group consisting of carbon, silicon, germanium, oxygen, and boron; wherein these atoms ~~can~~ be optionally are part of fused rings, aromatic rings, or spiro rings;

m, n and o are 0 or 1, with the proviso that $m+n+o$ is 2 or 3[.];

L_1 is a ~~group of the~~ cyclopentadienyl-type group or is isolobal to cyclopentadienyl, optionally substituted by one or more R^1 groups;

L_2 is a ~~group of the~~ cyclopentadienyl-type group or is isolobal to cyclopentadienyl, or ~~it~~ is selected from the group consisting of

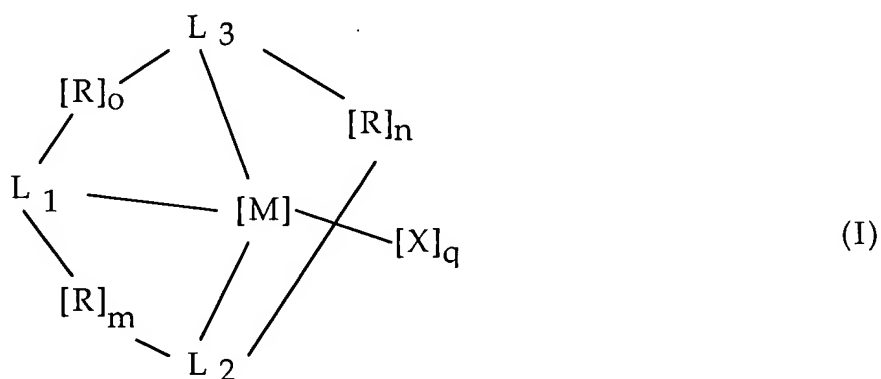
N, P, and B when $m+n=2$, ~~it~~or L_2 is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $m+n=1$;

L_3 is selected from the group consisting of N, P, and B when $n+o=2$, or L_3 ~~it~~ is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $n+o=1$; and

R^1 is hydrogen, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, or C_3 - C_{20} alkenyl, optionally comprising 1 to 5 heteroatoms ~~such as~~ selected from the group consisting of Si, N, P, O, F, Cl, and Br.

11. (Currently amended) ~~Process~~A process for the ~~polymerization of olefins preparing a polyolefin~~ characterized by the use of comprising polymerizing olefins with a catalyst according to ~~as claimed in claim 8 to yield the polyolefin.~~
12. (Currently amended) A polyolefin ~~Polyolefins obtainable~~obtained by the process of claim 11.
13. (New): Catalyst component according to claim 1 wherein M is selected from the group consisting of titanium, zirconium, and hafnium.
14. (New): Catalyst component according to claim 1 wherein L is a cyclopentadienyl, indenyl or fluorenyl ring, cyclopenteno[b]tiophenyl, cyclopenteno[b:b']-dithiophenyl, cyclopenteno[b]pyrrolyl, boratabenzene, phospholyl, dihydroindeno[b]indolyl, optionally substituted by one or more R^1 groups.
15. (New): Catalyst component according to claim 1 wherein L is a cyclopentadienyl, indenyl or fluorenyl ring, optionally substituted by one or more R^1 groups.

16. (New): Catalyst component according to claim 13 wherein L is a cyclopentadienyl, indenyl or fluorenyl ring, optionally substituted by one or more R^1 groups.
17. (New): Catalyst component according to claim 13 wherein L is a cyclopentadienyl, indenyl or fluorenyl ring, cyclopenteno[b]tiophenyl, cyclopenteno[b:b']-dithiophenyl, cyclopenteno[b]pyrrolyl, boratabenzene, phospholyl, dihydroindeno[b]indolyl, optionally substituted by one or more R^1 groups.
18. (New): Olefin polymerization catalyst component comprising an organometallic compound of general formula (I)



wherein

M is a transition metal selected from the group consisting of groups 3, 4-10, lanthanide, and actinide of the periodic table of the elements;

each R is independently a structural bridge rigidly connecting two ligands L_1 , L_2 and L_3 and is constituted by 1 to 4 chain atoms selected from the group consisting of carbon, silicon, germanium, oxygen, and boron;

m, n and o are 0 or 1, with the proviso that $m+n+o$ is 2 or 3;

L_1 is a cyclopentadienyl-type ligand or is isolobal to cyclopentadienyl;

L_2 is a cyclopentadienyl-type ligand, is isolobal to cyclopentadienyl, or is a monovalent anionic ligand selected from the group consisting of N, P, and B when $m+n=2$, or L_2 is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $m+n =1$;

L_3 is a monovalent anionic ligand selected from the group consisting of N, P, and B when $n+o =2$, or L_3 is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $n+o =1$;

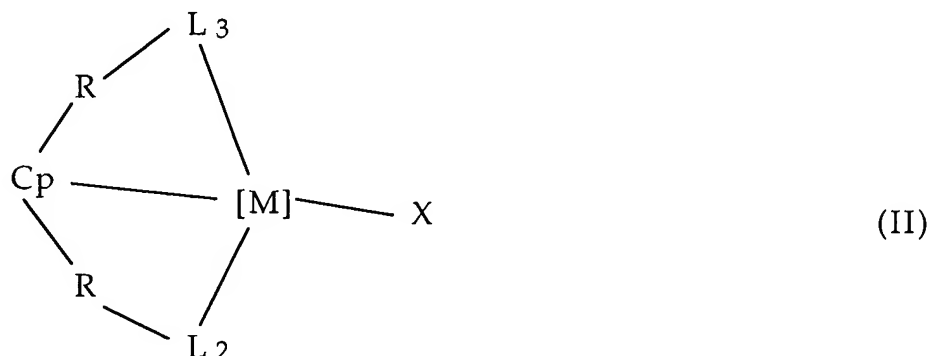
R^1 is hydrogen, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, or C_3 - C_{20} alkenyl, optionally comprising 1 to 5 heteroatoms selected from the group consisting of Si, N, P, O, F, Cl and Br;

each X is independently selected from the group consisting of hydrogen, halogen, NR^2 , and R^2 , wherein R^2 is equal to C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, or C_3 - C_{20} alkenyl, optionally comprising 1 to 5 heteroatoms selected from the group consisting of Si, N, P, O, F, Cl and Br; and

q is a number whose value is: 0, 1, 2 or 3, depending on a valency of the metal M.

19. (New): Catalyst component according to claim 18 containing $[D]_p$ wherein D is a neutral Lewis base and p is a number whose value is 0, 1, 2 or 3.
20. (New): Catalyst component according to claim 18 wherein D is selected from the group consisting of linear ethers, cyclic ethers, amines, and phosphines.

21. (New): Catalyst component according to claim 18 wherein the organometallic compound has formula (II)



wherein Cp is a cyclopentadienyl or indenyl ring optionally substituted by one or more R¹ groups;

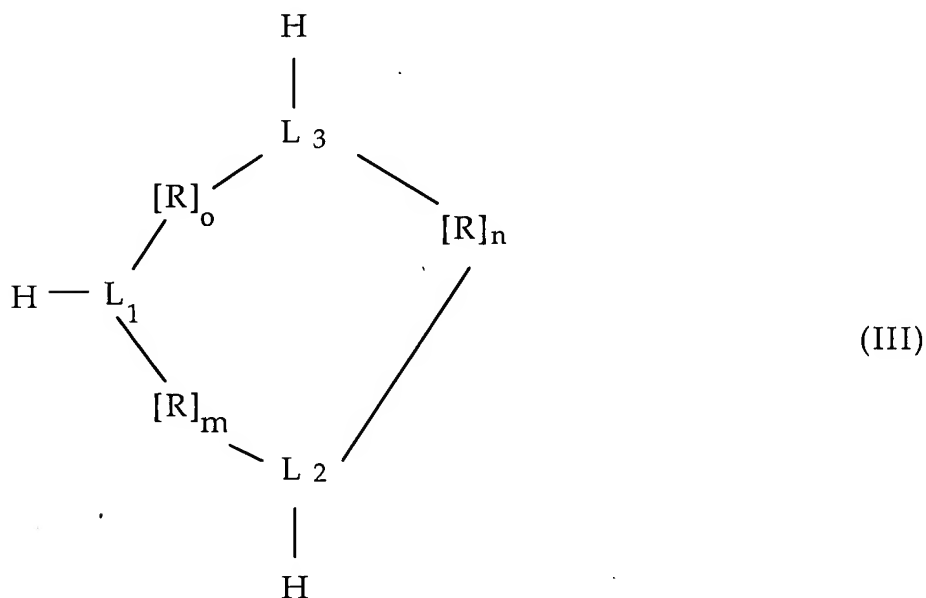
M is selected from the group consisting of Ti, Zr and Hf;

each R is independently selected from the group consisting of CR¹₂, SiR¹₂, CR¹₂-CR¹₂, CR¹₂-SiR¹₂, and SiR¹₂-SiR¹₂, wherein R¹ is hydrogen, C₁-C₂₀ alkyl, C₃-C₂₀ cycloalkyl, C₆-C₂₀ aryl, or C₃-C₂₀ alkenyl, optionally comprising 1 to 5 heteroatoms selected from the group consisting of Si, N, P, O, F, Cl, and Br;

L₂ and L₃ are independently selected from the group consisting of NR¹, PR¹, BR¹, O and S;

X is independently selected from the group consisting of hydrogen, halogen, NR², and R², wherein R² is equal to C₁-C₂₀ alkyl, C₃-C₂₀ cycloalkyl, C₆-C₂₀ aryl, or C₃-C₂₀ alkenyl, optionally comprising 1 to 5 heteroatoms selected from the group consisting of Si, N, P, O, F, Cl, and Br.

22. (New): Catalyst component according to claim 21 containing $[D]_p$ wherein D is a neutral Lewis base and p is a number whose value is 0, 1, 2 or 3.
23. (New): Catalyst component according to claim 21 wherein D is selected from the group consisting of linear ethers, cyclic ethers, amines, and phosphines.
24. (New): Process for preparation of the catalyst component as claimed in claim 18 comprising reacting a compound of formula MX_{q+3} wherein M is a transition metal selected from the group consisting of groups 3, 4-10, lanthanide, and actinide of the periodic table of the elements, X is a monovalent anionic ligand, and q is 0, 1, 2, or 3 depending on a valence of the metal M, with a compound of formula (III)



wherein

each R is independently a structural bridge rigidly connecting two ligands L_1 , L_2 and L_3 and is constituted by 1 to 4 chain atoms

selected from the group consisting of carbon, silicon, germanium, oxygen, and boron; wherein these chain atoms optionally are part of fused rings, aromatic rings, or spiro rings;

m, n and o are 0 or 1, with the proviso that m+n+o is 2 or 3;

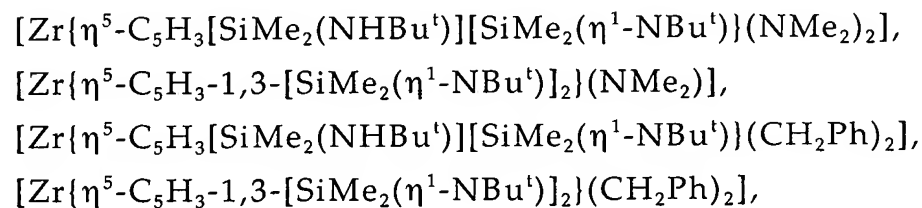
L₁ is a cyclopentadienyl-type group or is isolobal to cyclopentadienyl, optionally substituted by one or more R¹ groups;

L₂ is a cyclopentadienyl-type group, is isolobal to cyclopentadienyl, or is selected from the group consisting of N, P, and B when m+n=2, or L₂ is selected from the group consisting of NR¹, PR¹, BR¹, O and S when m+n =1;

L₃ is selected from the group consisting of N, P, and B when n+o =2, or L₃ is selected from the group consisting of NR¹, PR¹, BR¹, O and S when n+o =1; and

R¹ is hydrogen, C₁-C₂₀ alkyl, C₃-C₂₀ cycloalkyl, C₆-C₂₀ aryl, or C₃-C₂₀ alkenyl, optionally comprising 1 to 5 heteroatoms selected from the group consisting of Si, N, P, O, F, Cl, and Br.

25. (New) Catalyst component according to claim 1 wherein the organometallic compound of the formula (I) is selected from the group consisting of:



$[\text{Ti}\{\eta^5\text{-C}_5\text{H}_3[\text{SiMe}_2(\text{NHBu}^t)][\text{SiMe}_2(\eta^1\text{-NBu}^t)](\text{CH}_2\text{Ph})_2\}$, and
 $[\text{Ti}\{\eta^5\text{-C}_5\text{H}_3\text{-1,3-}[\text{SiMe}_2(\eta^1\text{-NBu}^t)]_2\}(\text{CH}_2\text{Ph})]$.

26. (New) Catalyst component according to claim 1 wherein the organometallic compound of the formula (I) is selected from the group consisting of:

$[\text{Zr}\{\eta^5\text{-C}_5\text{H}_3\text{-1,3-}[\text{SiMe}_2(\eta^1\text{-NBu}^t)]_2\}]^+[(\text{CH}_2\text{Ph})\text{B}(\text{C}_6\text{F}_5)_3]^-$ and
 $[\text{Ti}\{\eta^5\text{-C}_5\text{H}_3\text{-1,3-}[\text{SiMe}_2(\eta^1\text{-NBu}^t)]_2\}]^+[(\text{CH}_2\text{Ph})\text{B}(\text{C}_6\text{F}_5)_3]^-$.